



# *The National Map ... topographic mapping for the 21<sup>st</sup> Century*

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U.S. Geological Survey  
Geography Discipline Liaison  
Kentucky, Tennessee, West Virginia**

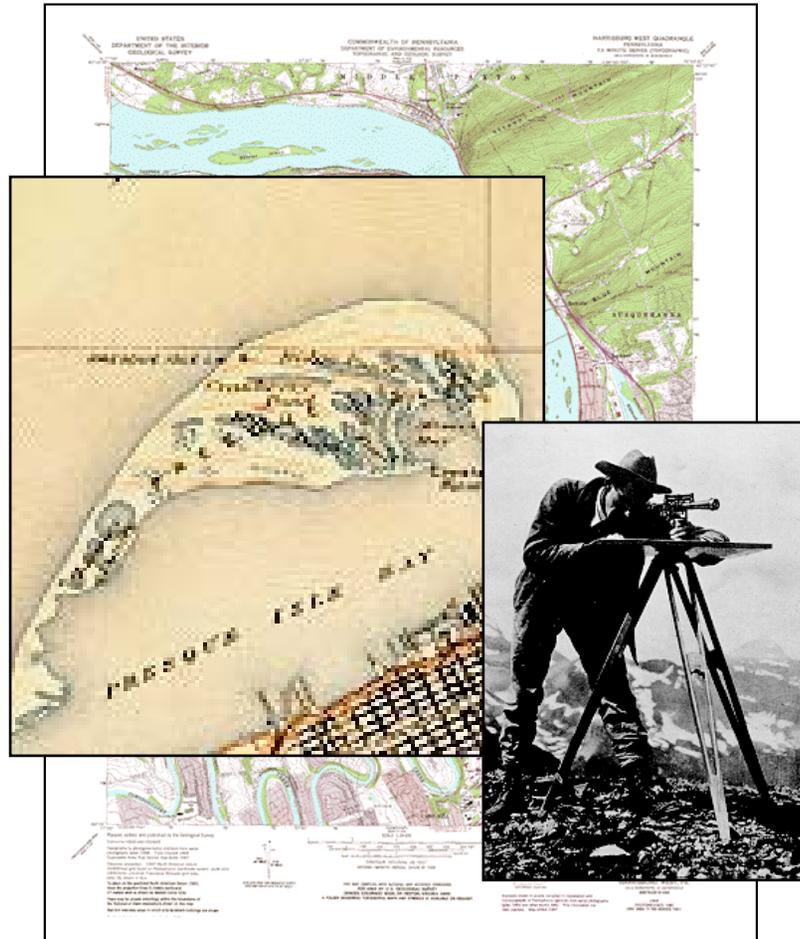
# Disciplines of the U.S. Geological Survey

- Biological Resources
- Geology
- Water Resources
- Geography

## Geography Discipline Liaison roles

- Increase awareness of USGS products and programs
- Foster geodata partnerships, projects, science opportunities w/ Feds, States, Locals
- Provide for data access, viewing, integration
- Work with GIS coordination groups
- Build *The National Map*

# USGS Topographic Maps



- **Once-over topographic mapping was an immense feat**
- **The only national synthesis of geographic content that is**

*Comprehensive*

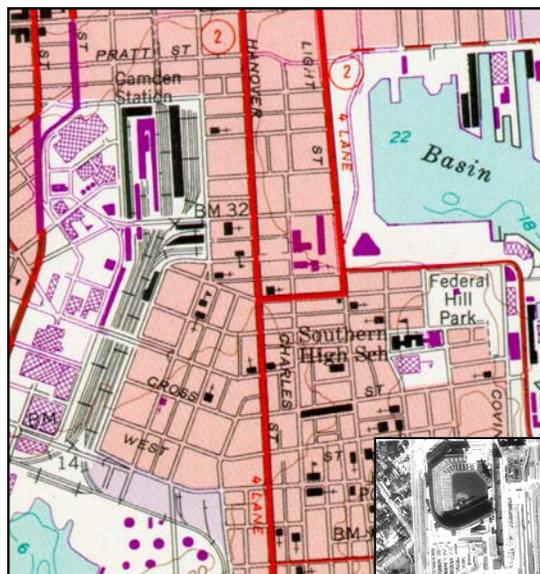
*Transjurisdictional*

*Border to border and  
coast to coast*

- **Cost of replication today would be \$2 to \$3 billion**

# What's Happening?

## Baltimore, MD



USGS 1953;  
PR 1966 &  
1974



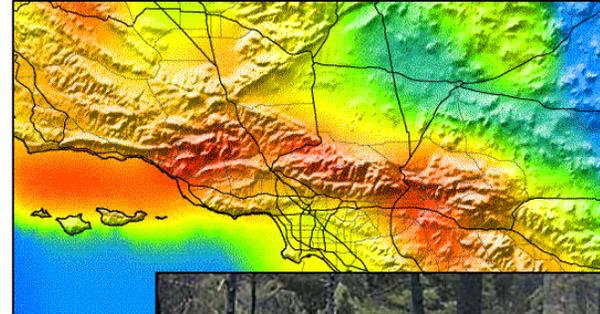
Pixxures 2000

- Value is eroding rapidly as maps become increasingly outdated
- Limited resources affect maintenance
- The maps and digital data do not correspond
- Duplication of effort is emphasizing the need to share
- National priorities are demanding current information

# *Value of Topographic Information*

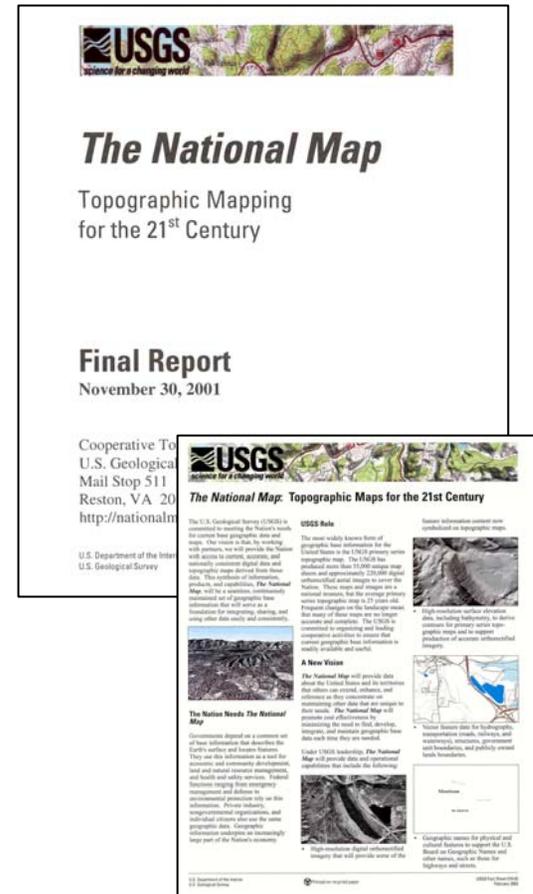
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- **Foundation for economic enterprise**
- **Essential for efficient delivery of government services**
- **Key to effective land and resource management**
- **Critical for *homeland security***



# First Step - A New Vision

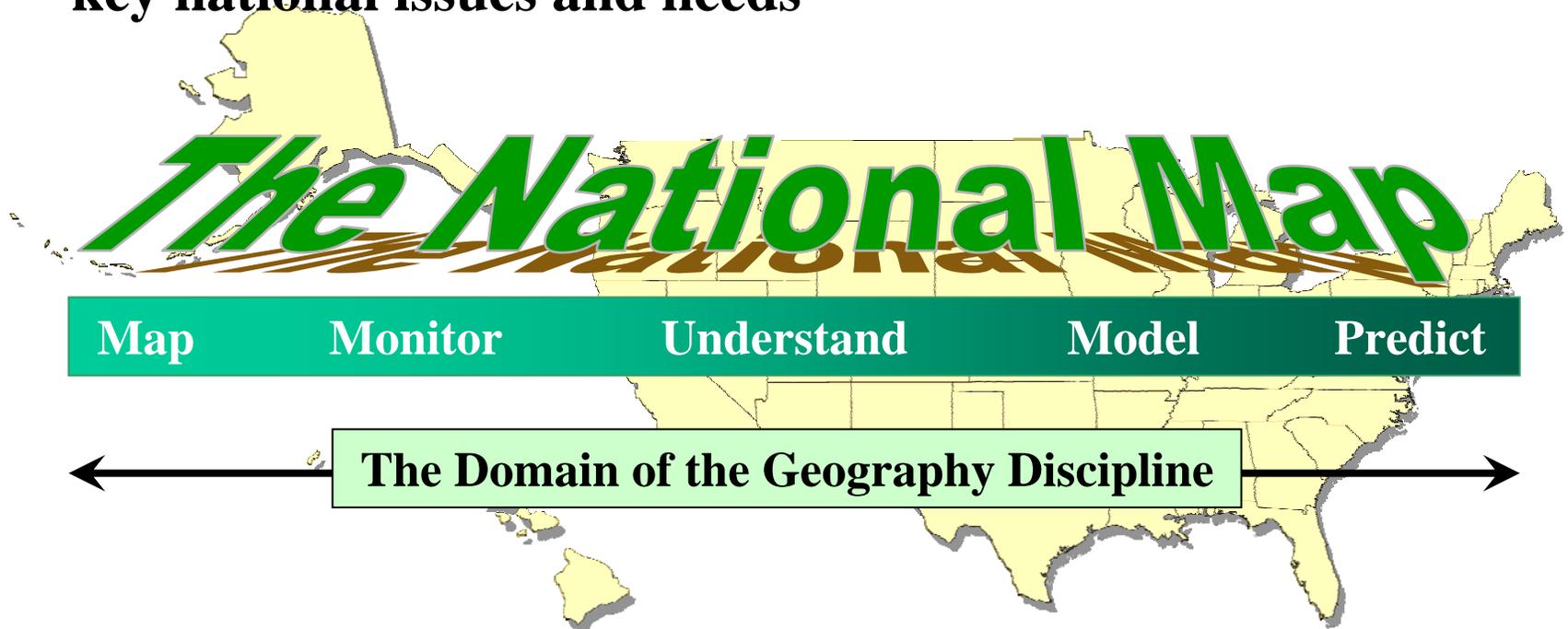
- **A seamless, continuously maintained, nationally consistent set of base geographic data – *THE NATIONAL MAP***
- **Maintained through *partnerships***
- **A national foundation for science, land and resource management, recreation, policy making, and homeland security**
- **Available over the Web – 24/7 - and the source for revised topographic maps**



# Second Step – Refocusing the Geography Discipline

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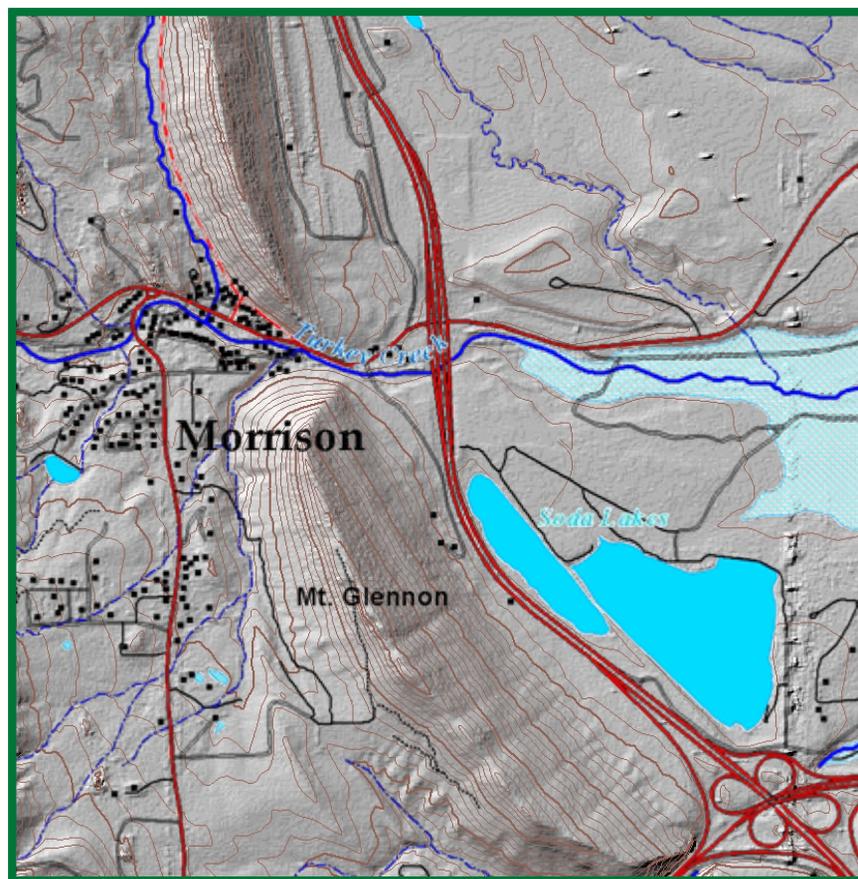
- Transition from “mapping” to “geography”
- Brings the full spectrum of geographic science to bear on key national issues and needs



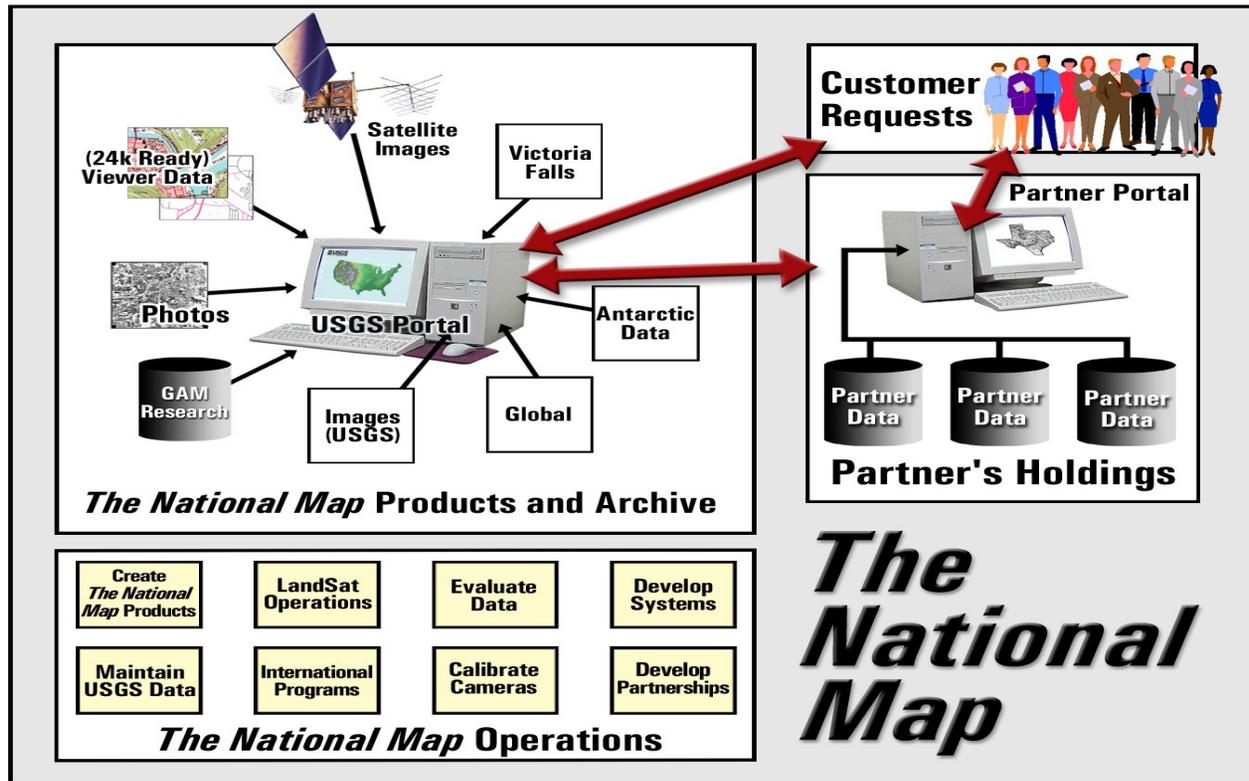
# The National Map: Data Content

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- **Orthorectified imagery**
- **Land characterization**
- **Elevation**
- **Vector layers:**
  - **Transportation**
  - **Hydrography**
  - **Structures**
  - **Boundaries**
- **Geographic names**



# Concept of Operations



<http://nationalmap.usgs.gov>

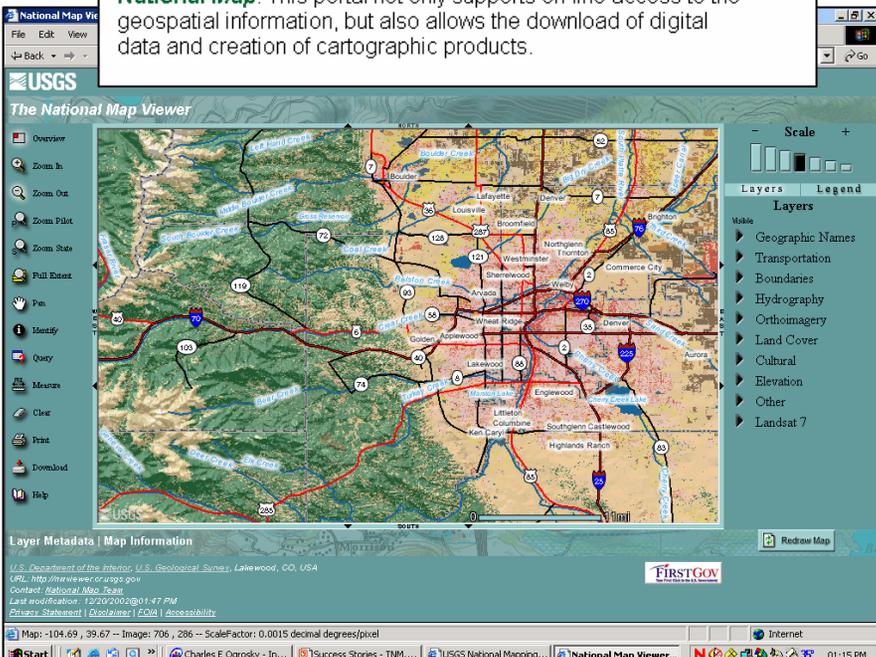
# Implementing a Web Viewer

- The data of *The National Map* are viewable at [nationalmap.usgs.gov](http://nationalmap.usgs.gov)
- This capability requires only a Web browser
- Initial sources of data include USGS national datasets and partner data from selected pilot projects

## About The National Map Viewer

[Go to The National Map Viewer](#)

Welcome to **The National Map** viewer. This geographic information system (GIS) application is designed to provide easy access to geospatial information. The viewer is a Web-enabled portal to all of the geospatial information contained in **The National Map**. This portal not only supports on-line access to the geospatial information, but also allows the download of digital data and creation of cartographic products.

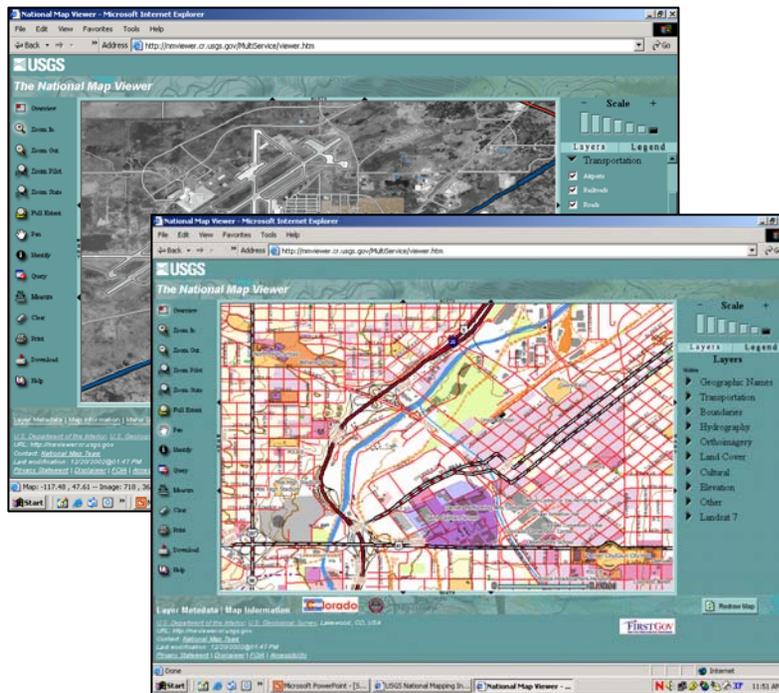


The screenshot displays the web interface of The National Map Viewer. At the top, there is a title 'About The National Map Viewer' and a button to 'Go to The National Map Viewer'. Below this is a welcome message. The main interface features a central map of the Denver, Colorado area, overlaid with various data layers. On the left side, there is a vertical toolbar with icons for Overview, Zoom In, Zoom Out, Zoom Pilot, Zoom Stop, Full Extent, Pin, Identify, Query, Measure, Clear, Print, Download, and Help. On the right side, there is a 'Layers' panel with a 'Legend' and a 'Scale' section. The 'Layers' panel includes a 'Visible' checkbox and a list of layers: Geographic Names, Transportation, Boundaries, Hydrography, Orthomography, Land Cover, Cultural, Elevation, Other, and Landsat 7. At the bottom of the map area, there is a 'Layer Metadata | Map Information' section with text including 'USGS, Department of the Interior, U.S. Geological Survey, Lakewood, CO, USA' and 'URL: http://nationalmap.usgs.gov'. The browser's address bar shows 'http://nationalmap.usgs.gov'. The Windows taskbar at the bottom indicates the system time as 01:15 PM.



# Implementing a Web Viewer

- Access through the viewer to content from Federal, State, county, and local sources illustrates key characteristics of *The National Map*:



- ✓ Access to best available data
- ✓ Data maintenance through partnerships
- ✓ Integration of content from diverse sources
- ✓ User definition of area and content for data viewing, and downloading
- ✓ Capability to generate maps from the data

<http://gisdata.usgs.net/website/nc3/viewer.htm>

Charlotte Prototype - Microsoft Internet Explorer

File Edit View Favorites Tools Help

← Back → Search Favorites History

Address <http://gisdata.usgs.net/website/nc3/viewer.htm> Go Links

### USGS 133 Urban Areas - Charlotte Prototype

Zoom In Zoom Out Full Extent Pan Identify Measure Clear Overview Legend Print Download Help Information Restart

Scale  
Zoom Out Zoom In  
(Approx. Scale=1:1345482)

Layers

- ▶ Additional Data
- ▶ Geographic Names
- ▶ Transportation
- ▶ Boundaries
- ▶ Hydrography
- ▶ Orthoimagery
- ▶ Land Cover
- ▶ Elevation

U.S. Department of the Interior || U.S. Geological Survey || EROS Data Center  
URL: <http://gisdata.usgs.net/website/nc3/default.htm> || Maintainer: [webmapping@usgs.gov](mailto:webmapping@usgs.gov) || Last Modified: Tue 17 Sep 2002

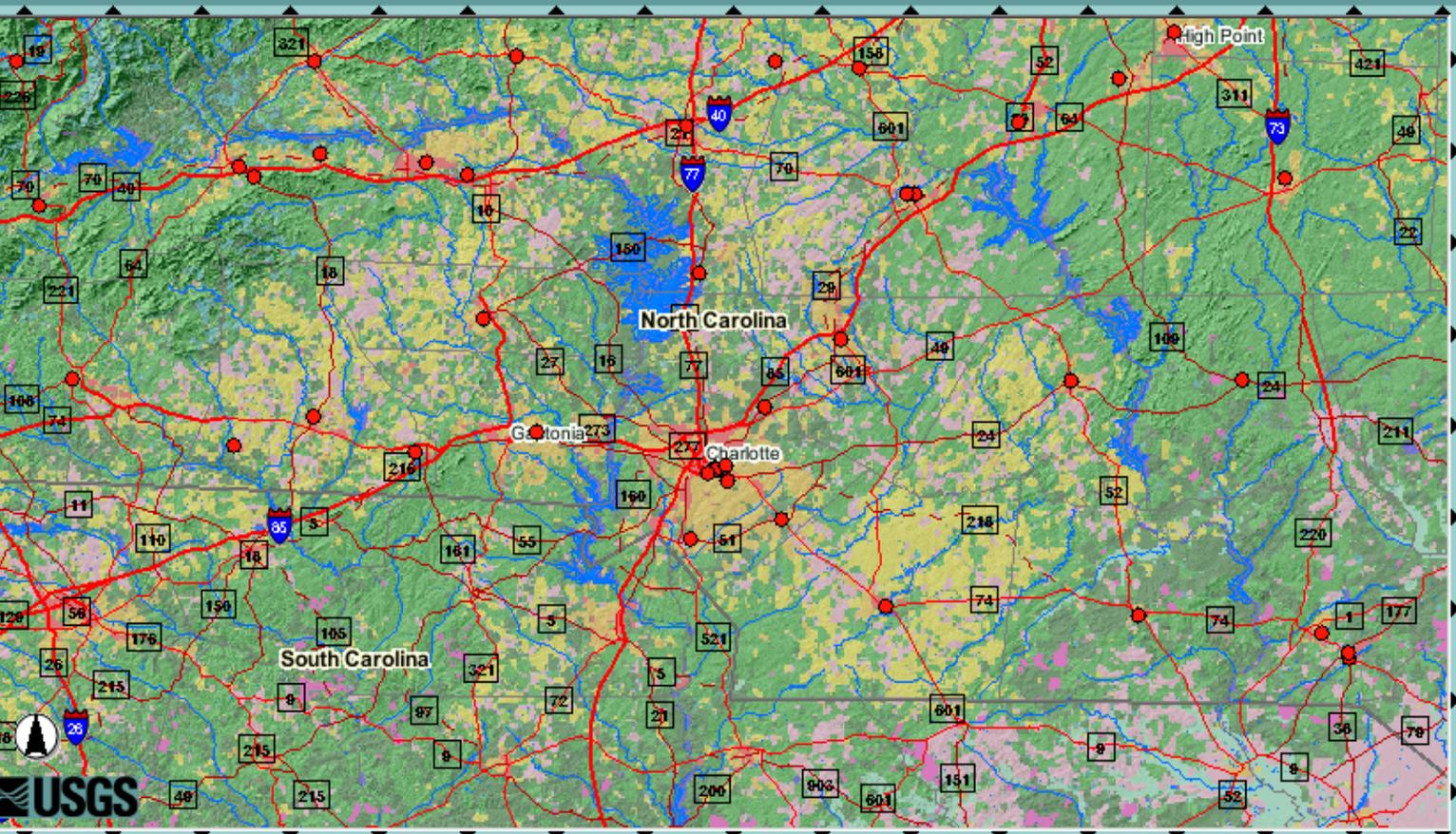
Map: -80.56 , 35.92 -- Image: 493 , 20 -- ScaleFactor: 0.0031425339366515743

Internet



# USGS 33 Urban Areas - Charlotte Prototype

Zoom In
 Zoom Out
 Full Extent
 Pan
 Identify
 Measure
 Clear
 Overview
 Legend
 Print
 Download
 Help
 Information
 Restart



**Scale**

Zoom Out (Approx. Scale=1:1345482) Zoom In

**Layers**

- ▼ **Additional Data**
  - NC Schools
  - NC Surface water intakes
  - NC Hospitals
  - NC Water Supply Watersheds
- ▶ **Geographic Names**
- ▶ **Transportation**
- ▶ **Boundaries**
- ▶ **Hydrography**
- ▶ **Orthoimagery**
- ▶ **Land Cover**
- ▶ **Elevation**

# USGS

## 133 Urban Areas - Charlotte Prototype

Zoom In Zoom Out Full Extent Pan Identify Measure Clear Overview Legend Print Download Help Information Restart

Scale  
Zoom Out Zoom In  
(Approx. Scale=1:1345482)

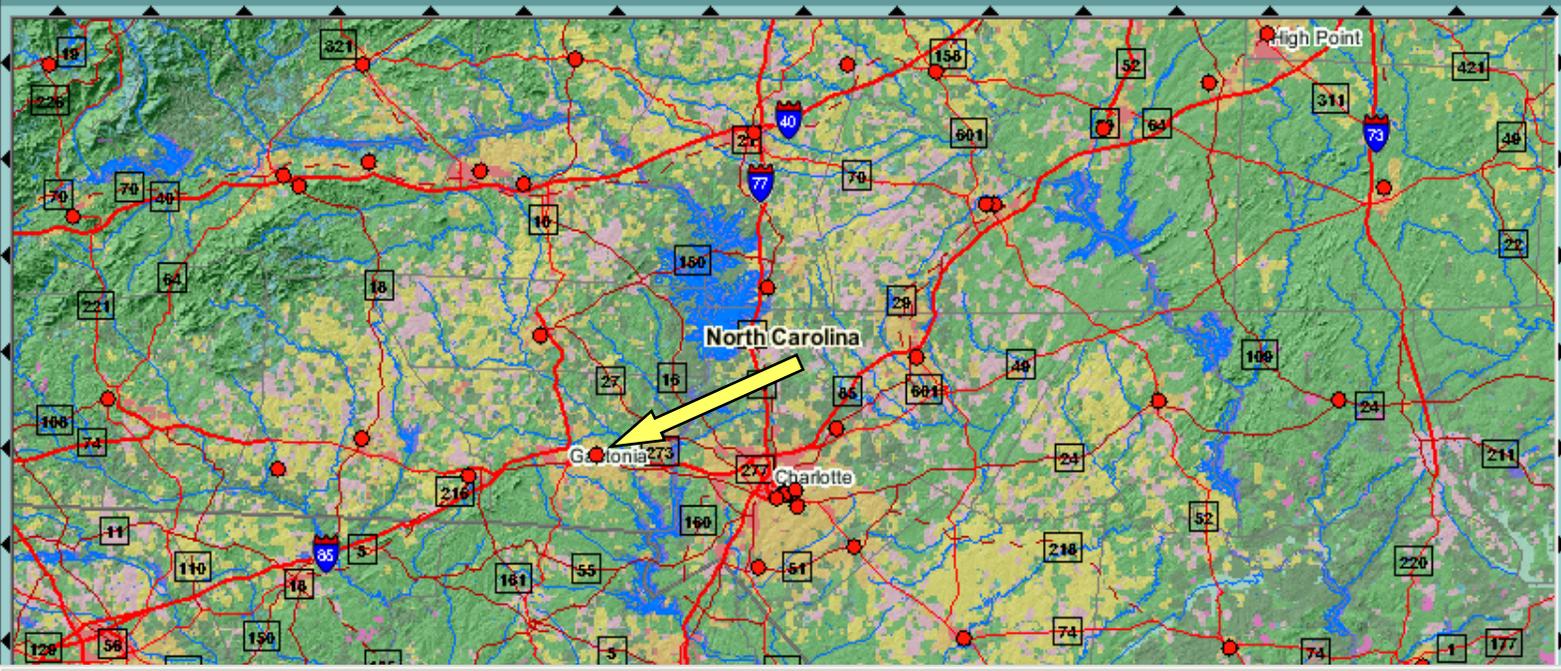
Layers

- Additional Data
  - NC Schools
  - NC Surface water
  - NC Intakes
  - NC Hospitals
  - NC Water Supply Watersheds
- Geographic Names
- Transportation
- Boundaries
- Hydrography
- Orthoimagery
- Land Cover
- Elevation

Identification\_Information:  
Citation:  
Citation\_Information:  
Originator:  
NC Department of Health & Human Services  
State Center for Health Statistics  
Publication\_Date: 200010601  
Title: Hospital Locations  
Geospatial\_Data\_Presentation\_Form: Map  
Publication\_Information:  
Publication\_Place: Raleigh, North Carolina  
Publisher:  
NC Department of Health & Human Services  
State Center for Health Statistics  
Other\_Citation\_Details: NCCGIA distributes this dataset  
Online\_Linkage: CGDB layer listing and Metadata - <http://www.cgia.state.nc.us/cgdb/index.html>  
Description:  
Abstract:  
NC Center for Geographic Information and Analysis developed the digital Hospital Locations data from hospital addresses provided by the State Center for Health Statistics This file enables users to identify

# USGS 133 Urban Areas - Charlotte Prototype

Zoom In  
 Zoom Out  
 Full Extent  
 Pan  
 Identify  
 Measure  
 Clear  
 Overview  
 Legend  
 Print  
 Download  
 Help  
 Information  
 Restart



**Scale**

Zoom Out Zoom In  
(Approx. Scale=1:134,5482)

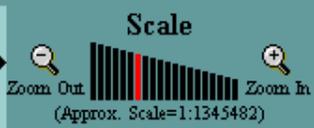
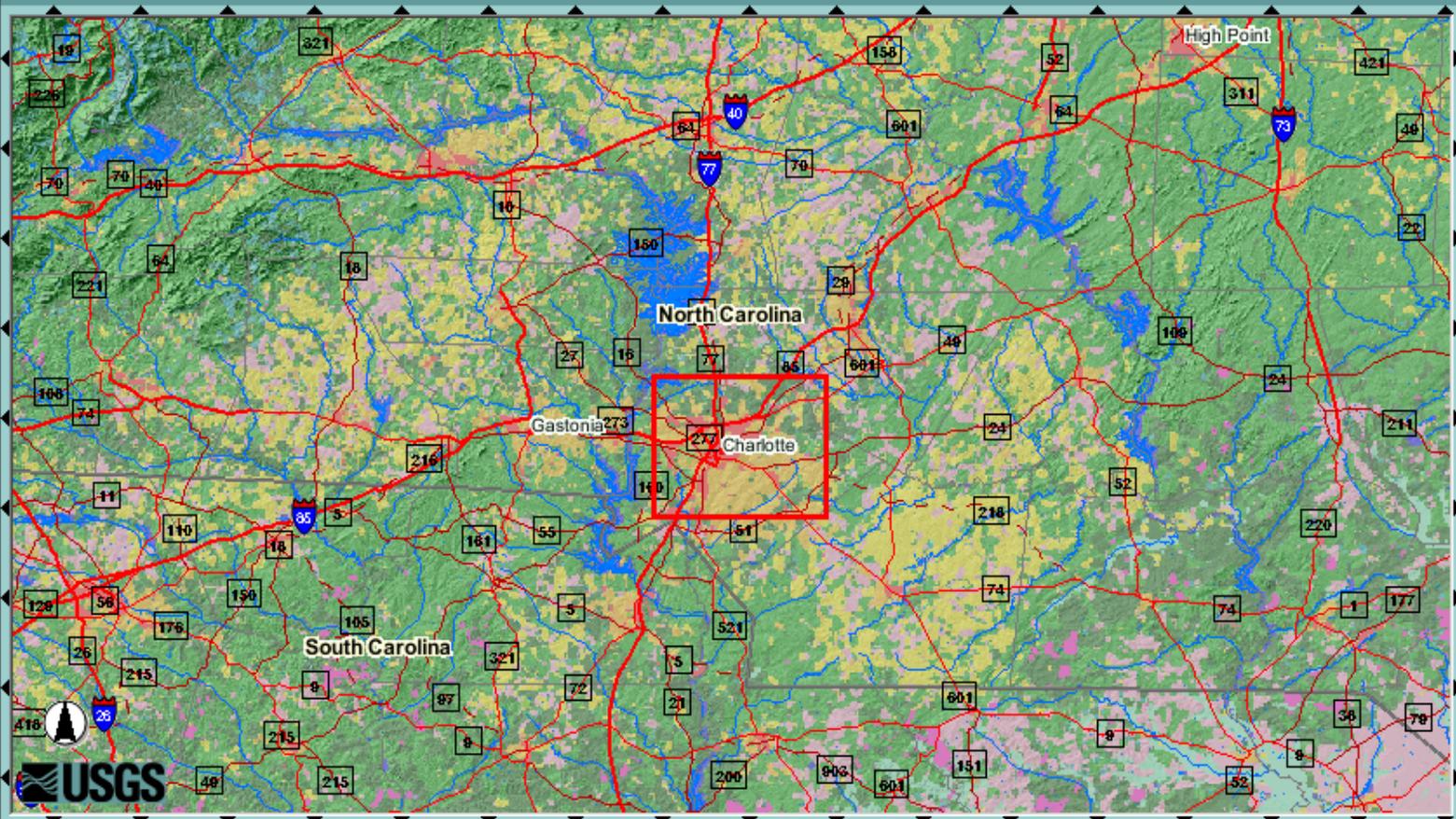
**Layers**

- ▼ Additional Data
  - NC Schools
  - NC Surface water intakes
  - NC Hospitals
  - NC Water Supply Watersheds
- ▶ Geographic Names
- ▶ Transportation
- ▶ Boundaries
- ▶ Hydrography
- ▶ Orthoimagery
- ▶ Land Cover

AREA	PERIMETER	HLS_	HLS_ID	NAME	ADDRESS	CITY	ZIP	COUNTY	PHONE	CANCER	#SHAPE#	#ID#
0	0	53	53	Gaston Memorial Hospital	2525 Court Dr	Gastonia	28054	Gaston	(704) 834-2000	yes	[Geometry]	53

# USGS 133 Urban Areas - Charlotte Prototype

Zoom In  
 Zoom Out  
 Full Extent  
 Pan  
 Identify  
 Measure  
 Clear  
 Overview  
 Legend  
 Print  
 Download  
 Help  
 Information  
 Restart

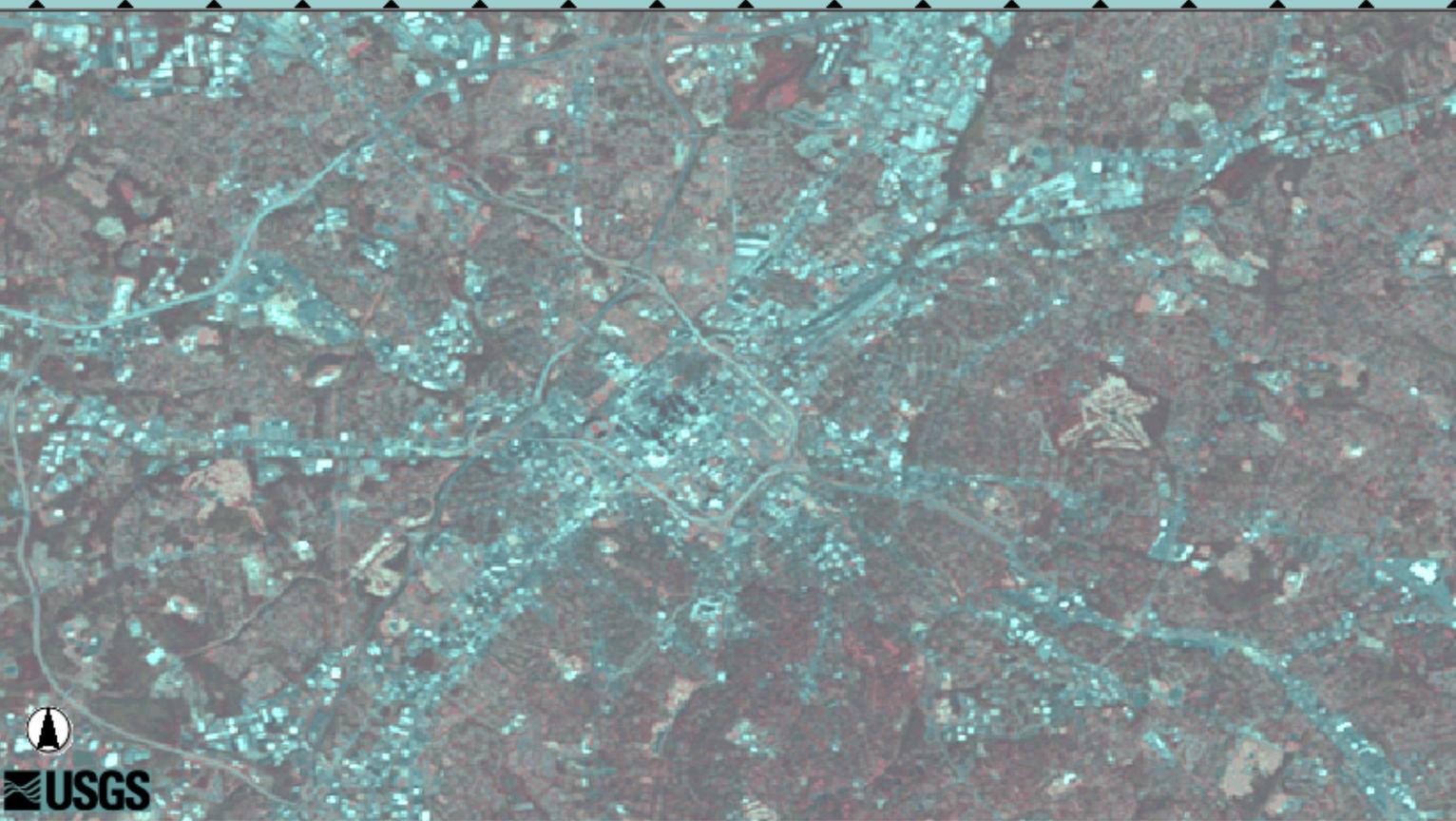


- Layers**
- ▶ Additional Data
  - ▶ Geographic Names
  - ▶ Transportation
  - ▶ Boundaries
  - ▶ Hydrography
  - ▶ Orthoimagery
  - ▶ Land Cover
  - ▶ Elevation



# 133 Urban Areas - Charlotte Prototype

Zoom In  
 Zoom Out  
 Full Extent  
 Pan  
 Identify  
 Measure  
 Clear  
 Overview  
 Legend  
 Print  
 Download  
 Help  
 Information  
 Restart



**Scale**

Zoom Out  
  
 Zoom In  
 (Approx. Scale=1:93860)

**Layers**

- ▶ Additional Data
- ▶ Geographic Names
- ▶ Transportation
- ▶ Boundaries
- ▶ Hydrography
- ▼ Orthoimagery
  - Mecklenburg hi-res ortho (EDC mirror)
  - Satellite Mosaic
- ▶ DOQ (1M)
- ▶ Land Cover
- ▶ Elevation



# USGS 133 Urban Areas - Charlotte Prototype

Zoom In  
 Zoom Out  
 Full Extent  
 Pan  
 Identify  
 Measure  
 Clear  
 Overview  
 Legend  
 Print  
 Download  
 Help  
 Information  
 Restart



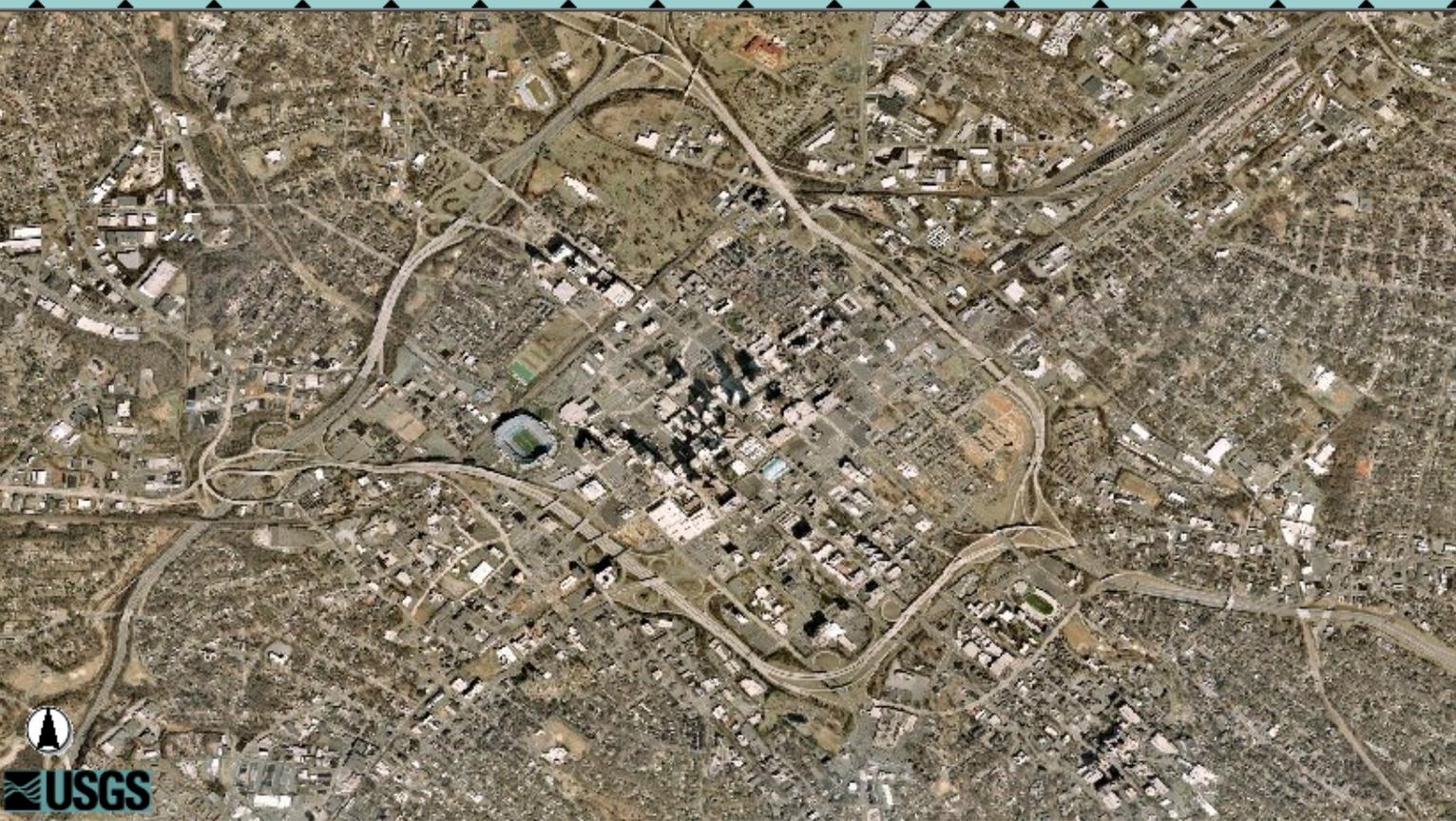
(Approx. Scale=1:36283)

**Layers**

- ▶ Additional Data
- ▶ Geographic Names
- ▶ Transportation
- ▶ Boundaries
- ▶ Hydrography
- ▼ Orthoimagery
  - Mecklenburg hi-res ortho (EDC mirror)
  - Mecklenburg Co 2001 Aerial Photography
  - 2001 Aerial Photography (EDC mirror)
  - Satellite Mosaic
- DOQ (1M)
- ▶ Land Cover
- ▶ Elevation

# USGS 133 Urban Areas - Charlotte Prototype

Zoom In  
 Zoom Out  
 Full Extent  
 Pan  
 Identify  
 Measure  
 Clear  
 Overview  
 Legend  
 Print  
 Download  
 Help  
 Information  
 Restart



Scale: 1:36283 (Approx. Scale=1:36283)

**Layers**

- ▶ Additional Data
- ▶ Geographic Names
- ▶ Transportation
- ▶ Boundaries
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Zoom In  
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 Print  
 Download  
 Help  
 Information  
 Restart



**Scale**

Zoom Out  
  
 Zoom In  
 (Approx. Scale=1:7132)

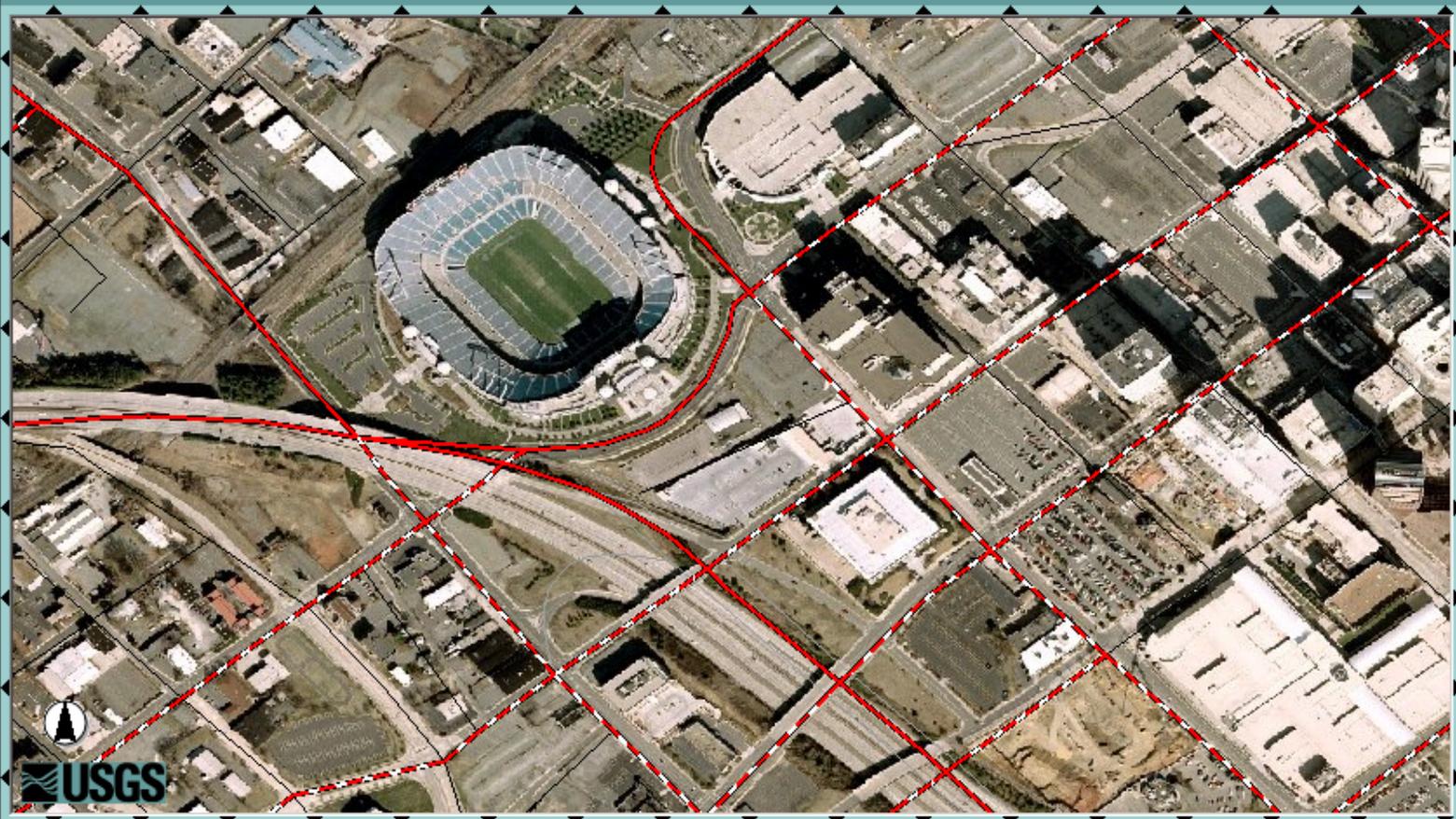
**Layers**

- ▶ Additional Data
- ▶ Geographic Names
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  - 2001 Aerial Photography (EDC mirror)
  - Satellite Mosaic
  - DOO (1M)



# USGS 133 Urban Areas - Charlotte Prototype

Zoom In  
 Zoom Out  
 Full Extent  
 Pan  
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 Restart



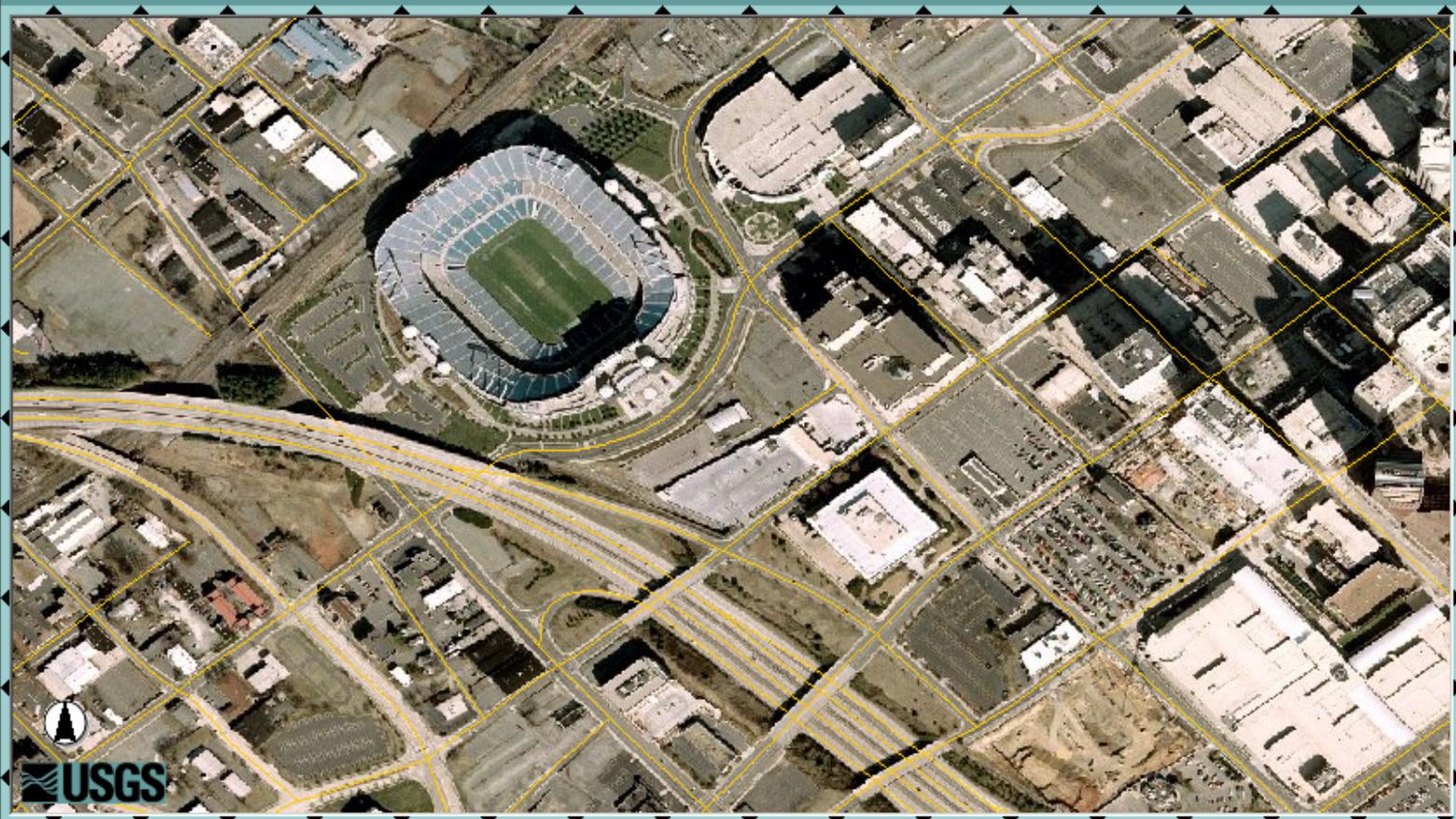
Zoom Out  
 (Approx. Scale=1:7132)  
 Zoom In

**Layers**

- ▶ **Additional Data**
- ▶ **Geographic Names**
- ▶ **Transportation**
  - Mecklenburg Co Streets (EDC Mirror)
  - Mecklenburg Co Streets
  - Road Labels
  - Roads (BTS)**
    - Light Duty Road
    - Primary Highway
    - Secondary Highway
    - Trail
    - Other Road
- ▶ **Boundaries**
- ▶ **Hydrography**
- ▶ **Orthoimagery**
- ▶ **Land Cover**
- ▶ **Elevation**

# USGS 133 Urban Areas - Charlotte Prototype

Zoom In   
 Zoom Out   
 Full Extent   
 Pan   
 Identify   
 Measure   
 Clear   
 Overview   
 Legend   
 Print   
 Download   
 Help   
 Information   
 Restart



Zoom Out   
 (Approx. Scale=1:7132)   
 Zoom In

**Layers**

- ▶ **Additional Data**
- ▶ **Geographic Names**
- ▶ **Transportation**
  - Mecklenburg Co Streets (EDC Mirror)
  - Mecklenburg Co Streets
  - Road Labels
  - Roads (BTS)
    - Light Duty Road
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    - Secondary Highway
    - Trail
    - Other Road
- ▶ **Boundaries**
- ▶ **Hydrography**
- ▶ **Orthoimagery**
- ▶ **Land Cover**
- ▶ **Elevation**



# ***The National Map and Kentucky***

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- ***2002-03 The National Map*** (8 themes) introduced to Kentucky spatial data community
- **2003 – Kentucky’s GIAC endorsed The Commonwealth Map – (8 + data themes) Office of Geographic Information has lead**
- **2003 – Kentucky and USGS sign MOU to partner on implementing The Commonwealth Map as the state’s piece of *The National Map***
- **Establishing relationships at all levels of government**

# ***The National Map and Homeland Security***

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- **2001 – *The National Map* Vision**
- **September 11, 2001- tragedy**
- **Homeland Security became the initial focus for *The National Map* implementation**
- **USGS is coordinating with federal, state, and local agencies, and first responders**
- **Establishing relationships at all levels of government**

## **The National Map**

- **Elevation Data, 30-meter or finer**
- **Land Cover**
- **Hydrography**
- **Geographic Names**
- **Orthoimagery, 1-meter or finer**
- **Transportation**
- **Structures**
- **Boundary Data**

## **HSIP Infrastructure Sectors**

### **National Coverage**

- **Information & Communications**
- **Banking, Finance, & Insurance**
- **Water Supply**
- **Transportation**
- **Emergency Services / COG**
- **Energy**
- **Emergency/Law Enforcement**
- **Public Health**
- **Special Functions**
- **Important Industries**
- **High Value/Symbolic Targets**
- **Boundaries**

### **Urban Sub Layers**

- **TV & Radio Broadcast**
- **Financial Institutions**
- **Public Water Supply Intakes**
- **Airports and Airfields**
- **Emergency Management**
- **Power Plants & Substations**
- **State Police Offices**
- **Primary Care Facilities**
- **Government Installations**
- **Hazardous Material Facilities**
- **Landmark Structures**
- **City/County**

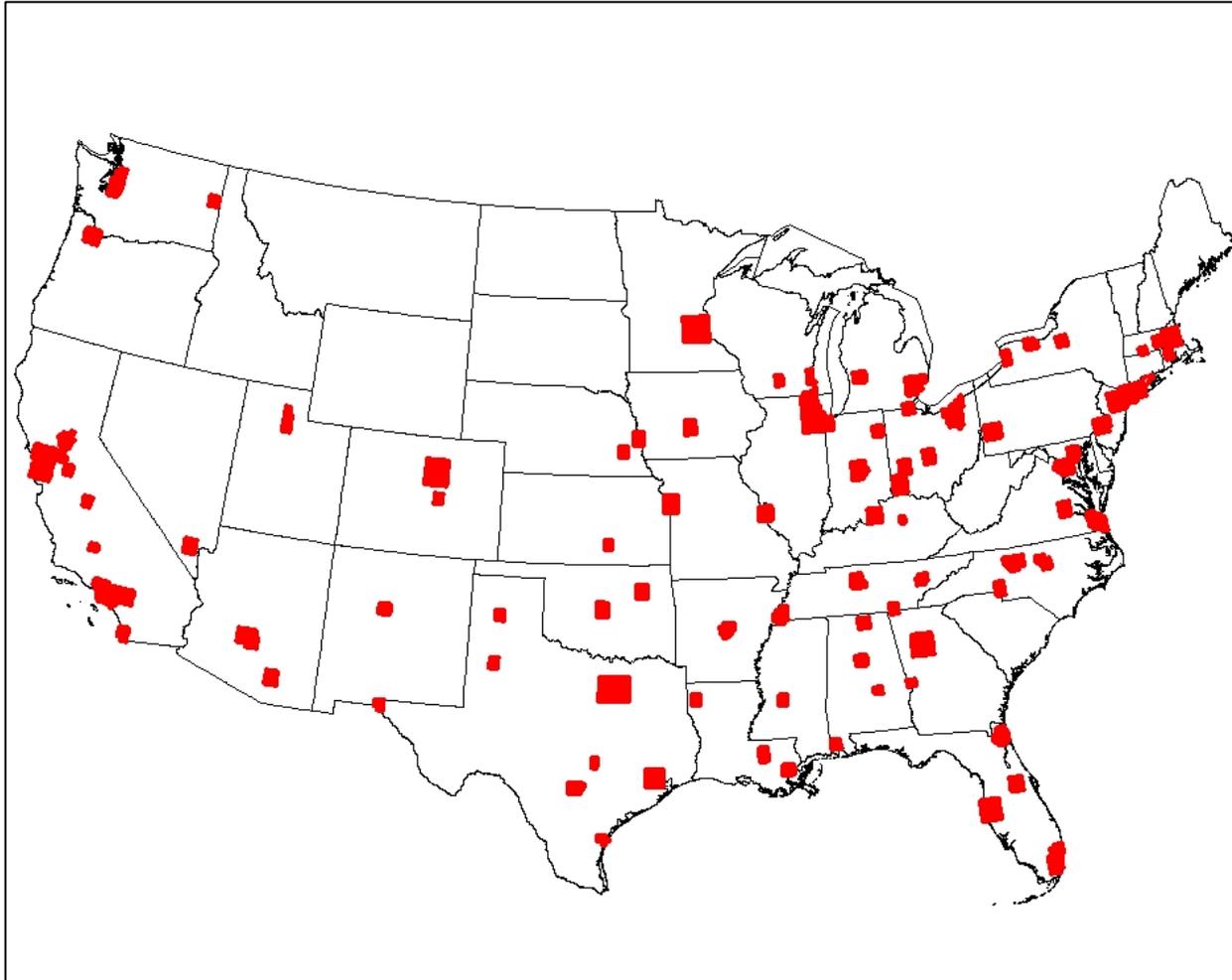
# ***Importance of Infrastructure Data***

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# ***Populated Places***

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# ***Major Roads***

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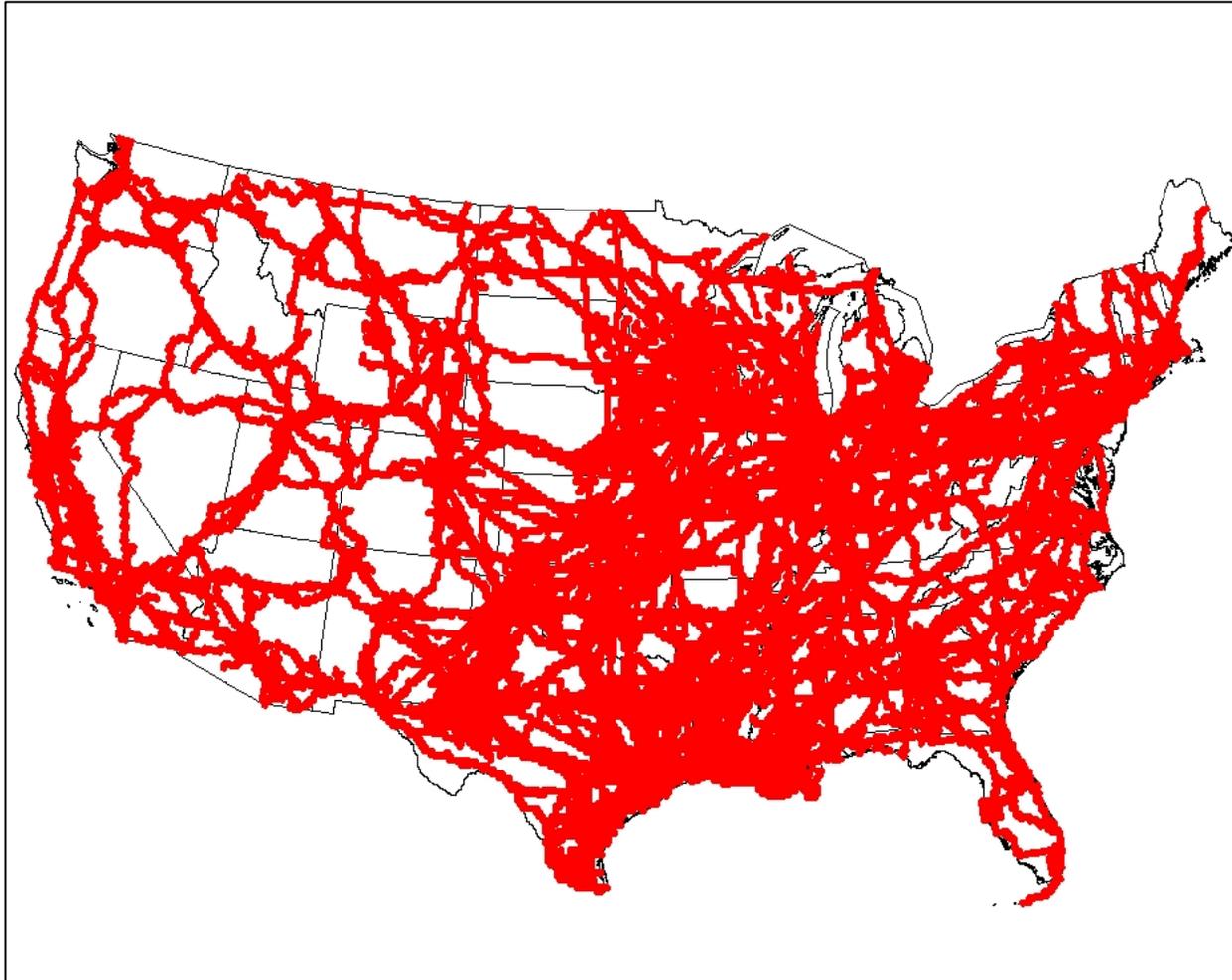
# ***Major Railroads***

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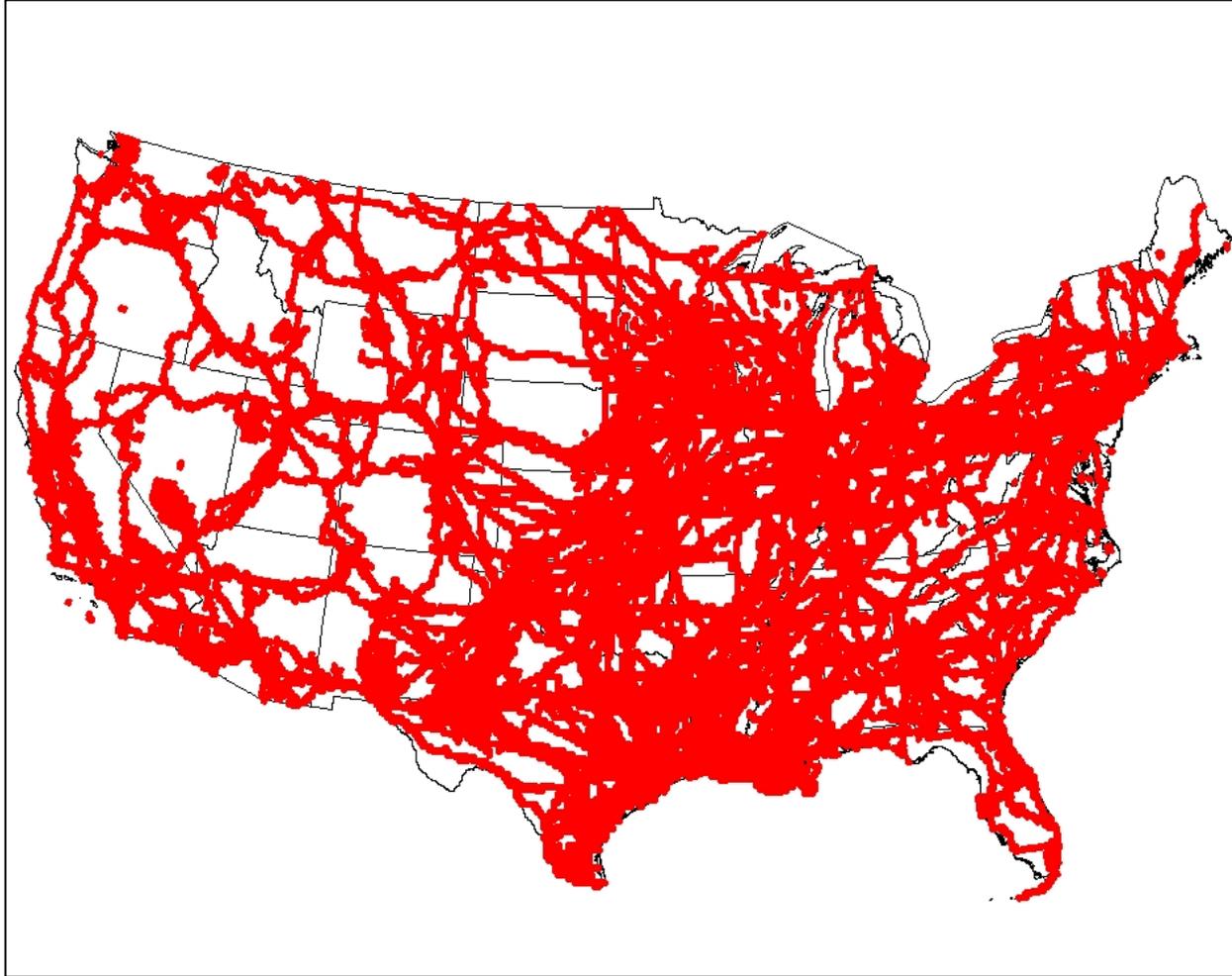
# *Pipelines*

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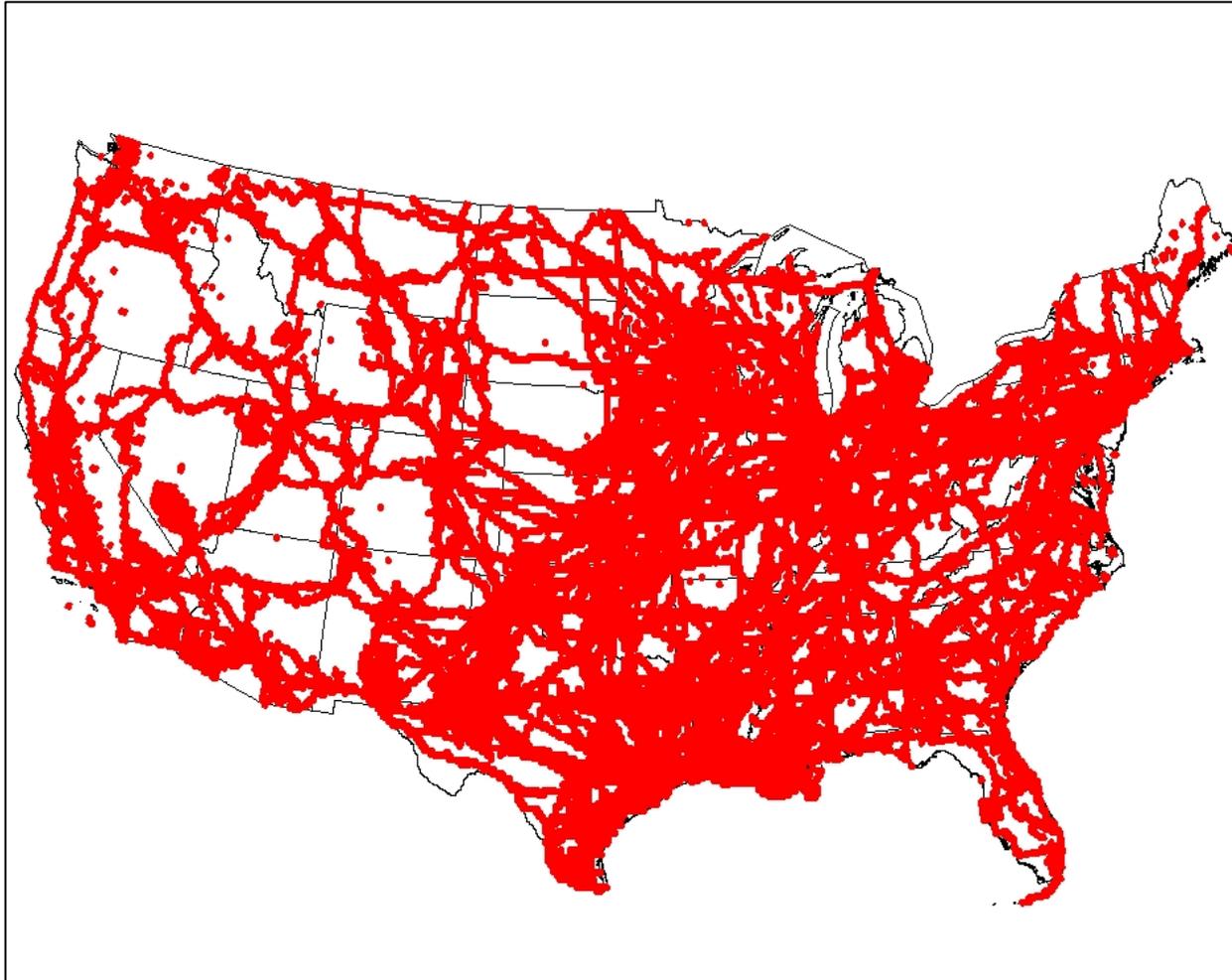
# ***Selected Military Bases and Federal Lands***

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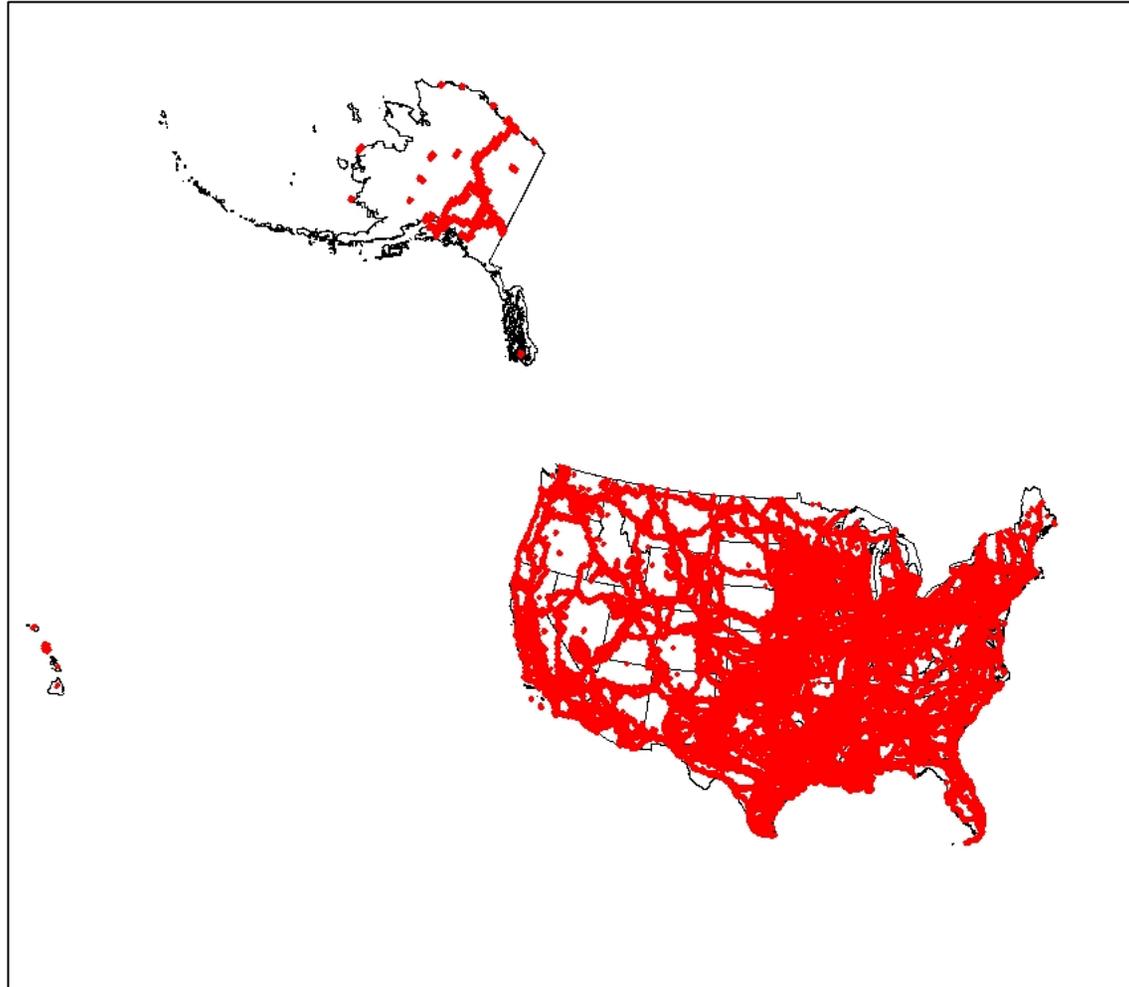
# ***Large Dams, Power Plants, and Airports***

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# ***Selected Infrastructure: The 50 States***

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# Focus of *The National Map*: 133-Urban Areas

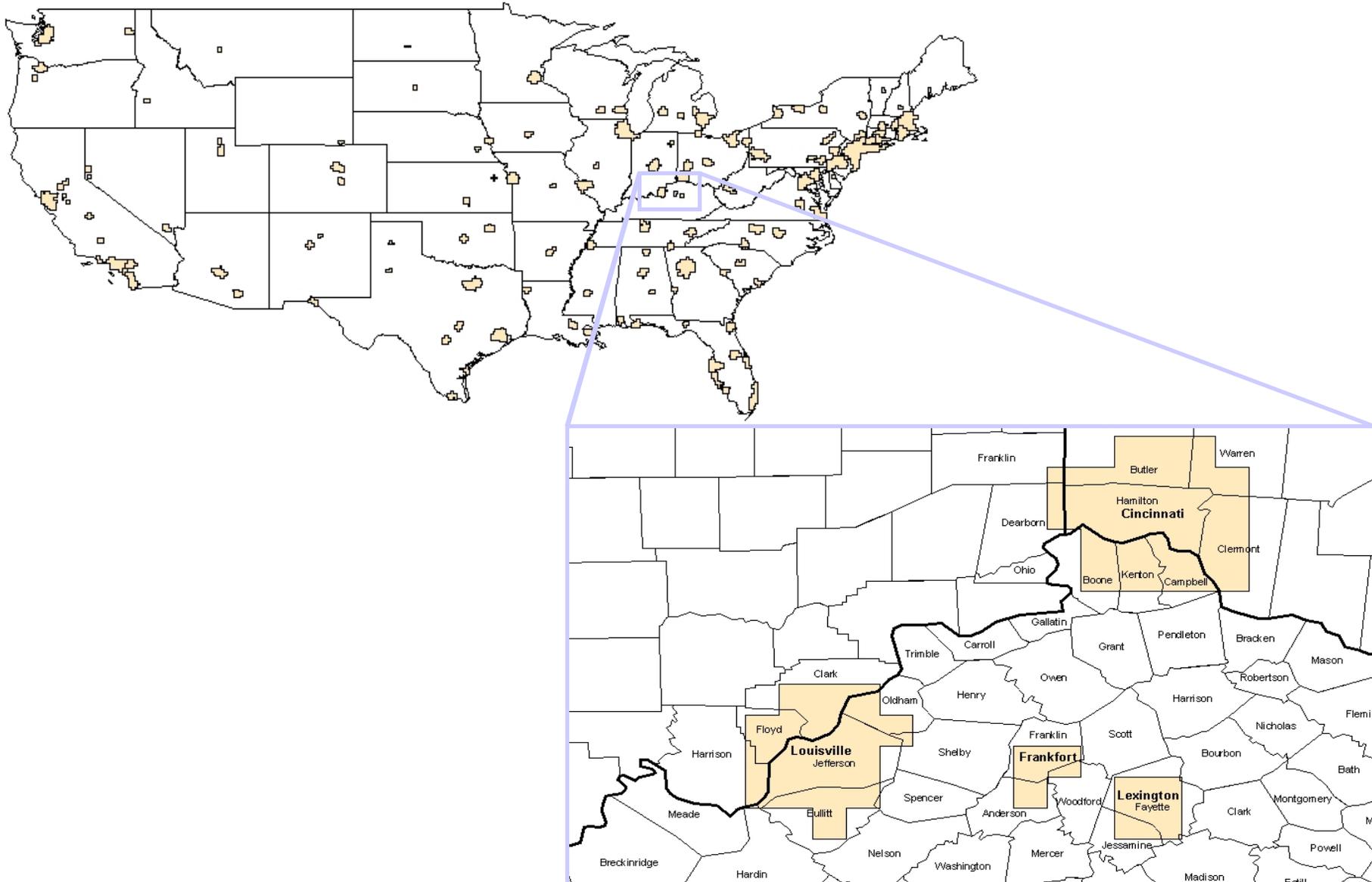
- Mapping America's urban areas:
  - Detailed color imagery
  - Detailed elevation data
  - Other *National Map* layers
  - Critical infrastructure
- **Linking** with state and local agencies, and “first responders”
- **Working** with NIMA and other federal agencies

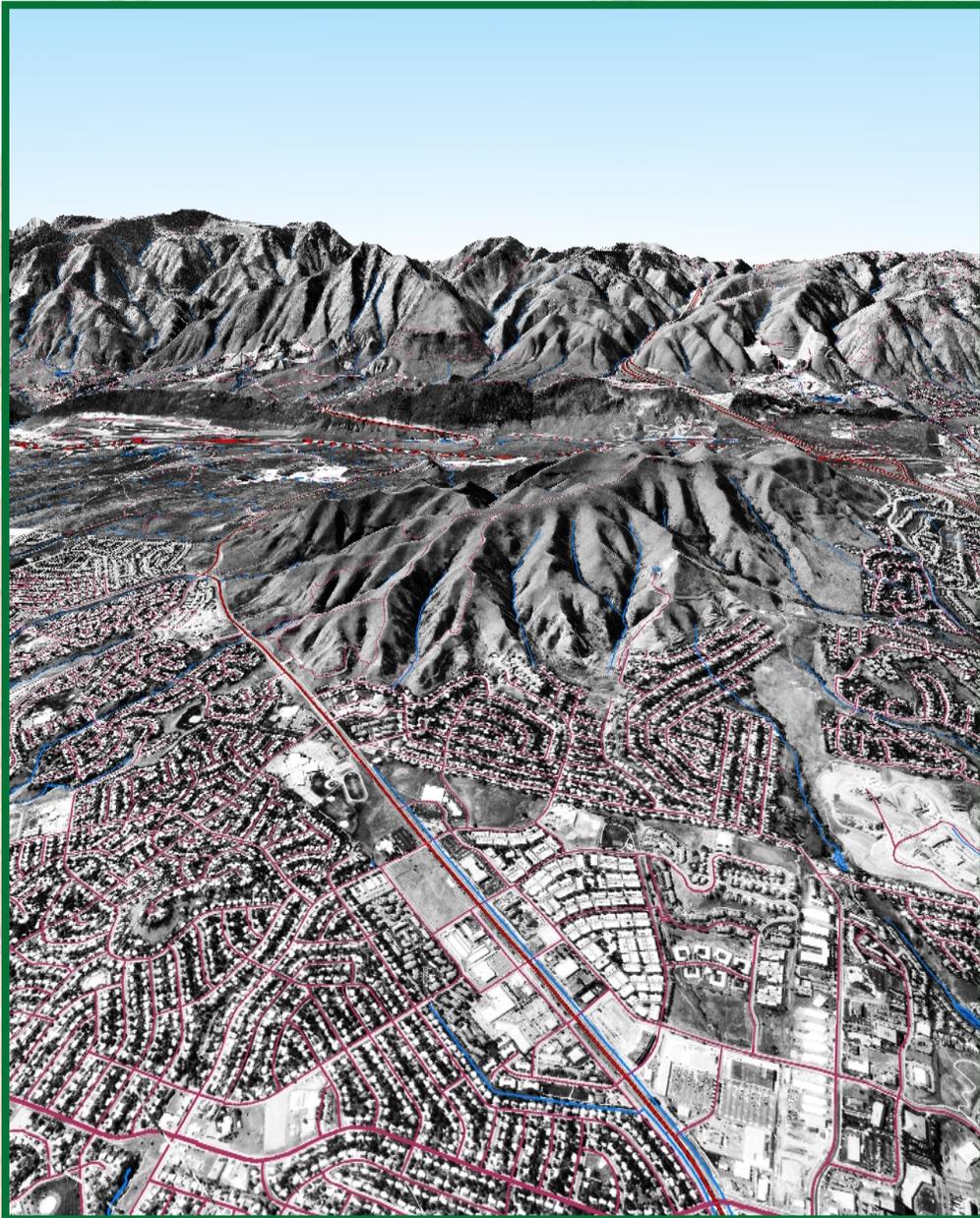


(San Juan, Anchorage, Juneau, and Honolulu not shown)

# 133 Urban Areas Project

## Kentucky's Urban Areas





# *The National Map ... An integrated view*

Elevation  
Ortho Imagery  
Hydrography  
Geographic Names  
Landcover  
Transportation  
Boundaries  
Structures



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**502-493-1945**  
**[bbauch@usgs.gov](mailto:bbauch@usgs.gov)**

**U.S. Department of the Interior**  
**U.S. Geological Survey**